

Who is Right? Are Plastics Really Attractive?

塑膠应用在扣件的利弊分析

Let's first note two diametrically different official statements:

1. Presentation of a company producing plastic fasteners:

"Non-metallic plastic fasteners can significantly reduce the weight, cost, and assembling complexities of your projects because of their lightweight, non-magnetic, non-corrosive, non-toxic, non-flammable, non-abrasive, non-conducting, and heat-resistant properties. They are invaluable for applications where high tensile holding strength is not the primary requirement."

2. Vice-President of the European Commission for Sustainable Development once said:

"We must stop the penetration of plastic into our water, into our food and even into our organisms. The only long-term solution to reducing the volume of plastic waste is its more intense recycling and reuse."

And continuing:

"Europeans produce 25 million tonnes of plastic waste every year, with just a little less than 30% collected for recycling. Plastics make up 85% of the world's waste in the world. Half of all plastics have become waste in as little as four years from the start of use. According to the new report of "Plastic and Climate", plastic will contribute greenhouse gases in the equivalent of 850 million tons of carbon dioxide (CO2) to the atmosphere in 2019."

So who is right? This article will try to give an answer to this question.

▪ About Plastics in General ▪

According to Wikipedia, plastics are a wide range of synthetic or semi-synthetic materials that use polymers as a main ingredient. Their plasticity makes it possible for plastics to be moulded, extruded or pressed into solid objects of various shapes. This adaptability, plus a wide range of other properties, such as being lightweight, durable, flexible, and inexpensive to produce, has led to its widespread use. Fasteners are no exception in this regard.

The success and dominance of plastics starting in the early 20th century has caused widespread environmental problems, due to their slow decomposition rate in natural ecosystems. Most plastic produced has not been reused, or is incapable of reuse, either being captured in landfills or persisting in the environment as plastic pollution and microplastics. Plastic pollution can be found in all the world's major water bodies, for example, creating garbage patches in all of the world's oceans and contaminating terrestrial ecosystems. **Of all the plastic discarded so far, only some 10% has been recycled.**

▪ The Situation in the Area of Fasteners ▪

In particular, we must distinguish between recyclable and non-recyclable plastic products. The first category includes fasteners made of plastic only (**Fig. 1**), which is without any combination with metal such as screws, nuts, washers, etc. **In the following text, our focus will be oriented on combined fasteners. A typical representative of this category is a DIN 985 lock nut (Fig. 2 and 3).**

(Fig. 1)



(Fig. 2)



(Fig. 3)



As shown in these Figures, the DIN 985 nut consists of two parts. The steel threaded nut and plastic retaining ring are pressed on the nut output part (**Fig. 2**).

The ring weight is about 4.8% of the weight of the nut, e.g., with M18 nut it is a ca. 0.002KG ring. Is it a lot or a little? Certainly most would say that this is a negligible amount and there is no point in dealing with it. But what is the reality?

The DIN 985 lock nut is one of the most widely used fasteners in construction and is produced on a mass scale. Accurate statistical data is not available, so we need to base the reasoning only on assumption.

With a daily production of about 1 million DIN 985 nuts, then it means 2,000KG of plastics which is burned together with metal waste in the melting furnace. Compared with the Plastic and Climate report, it's the minimum, but must it be?

In practice a washer frequently used in boilers or sheet metal roofs in Fig. 4 cannot be ecologically recycled.

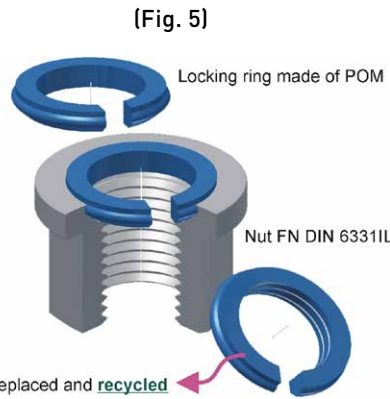


▪ Solution Options ▪

An equivalent replacement of DIN 985 lock nuts is their all-metal version. However, there are other options. One of them is the lock nut IstLock® with a replaceable locking plastic ring (Fig. 5 and 6) or in various metal versions (Fig. 7 for example).

▪ Conclusion ▪

The classic saying goes: **“Every technical drawing is a compromise of functionality, price and ecological impacts on the environment.”** This is also the case here. The given article is meant to be an attempt to evaluate



the possible influences of the often used parts for mechanical joining on the environment. As mentioned above, not all fasteners are ecologically acceptable. Fortunately, they can be replaced. It is up to the designer to know the possibilities and limits.

The present article points out the current problem - disproportionate contamination of nature by plastic rubbish and suggesting possible solutions in the field of fasteners.



(Fig. 7)

So what is the answer to the initial question? Both are right. Plastic products cannot currently be excluded from technical practice. However, the condition is the possibility of recycling! □

Copyright owned by Fastener World / Article by Jozef Dominik

Free Samples!
ok@malaxygroup.com
 Upon mail's request!

MALAXY
 — EST. 2001 —

CE ISO 9001 TÜVRheinland SGS

Shanghai Malaxy Industry Co., Ltd.

Add: No. 5 Haiyan Development Zone, Haiyan, Zhejiang, China
Email: ok@malaxygroup.com
Phone: +86 18018587352
Fax: +86 (021) 5505 8885
Website: www.malaxygroup.com

Website

WhatsApp

WeChat

China Fastener World no.73/2025

